**TITLE 19 NATURAL RESOURCES AND WILDLIFE**
**CHAPTER 25 ADMINISTRATION AND USE OF WATER – GENERAL PROVISIONS**
**PART 12 DAM DESIGN, CONSTRUCTION AND DAM SAFETY**

**19.25.12.1 ISSUING AGENCY:** New Mexico Office of the State Engineer
[19.25.12.1 NMAC – N, x/x/2004]

**19.25.12.2 SCOPE:** These regulations apply to the design and construction of all jurisdictional dams in New Mexico and are intended to facilitate the continued safe operation and maintenance of all non-federal jurisdictional dams. These regulations govern the review and acceptance of plans for construction, alteration, modification, repair, enlargement and removal of a jurisdictional dam. These regulations ensure the continued safe operation, maintenance, site security and emergency preparedness for existing non-federal jurisdictional dams. These regulations do not authorize the appropriation or use of water pursuant to 19.26 NMAC and 19.27 NMAC.
[19.25.12.2 NMAC – N, x/x/2004]

**19.25.12.3 STATUTORY AUTHORITY:** NMSA 1978, Section 72-5-32 (2004) requires any person, association or corporation, public or private, the state or the United States that is intending to construct a jurisdictional dam to submit detailed plans to the state engineer. NMSA 1978, Sections 72-5-9 and 72-5-10 establish the state engineer's authority over the construction of jurisdictional dams and issuing certificates of construction. NMSA 1978, Sections 72-5-8 and 72-5-14 require construction to be completed in a time limit set by the state engineer and procedures for requesting an extension of time. NMSA 1978, Sections 72-5-11 (1979), 72-5-12 (1979) and 72-5-13 give the state engineer jurisdiction over unsafe dams, penalties for failure to comply with state engineer orders and priority of liens. NMSA 1978, Section 72-2-6 (1987) gives the state engineer the authority to assess fees. NMSA 1978, Section 72-2-8 gives the state engineer authority to promulgate regulations necessary to implement and enforce any provisions of the law and to aid the state engineer in the accomplishment of his duties. NMSA 1978, Section 72-8-1 gives the state engineer the authority to enter upon private property for the performance of his duties. Nothing in these regulations shall limit the state engineer's authority to take alternative or additional actions relating to the design, construction and safety of dams.
[19.25.12.3 NMAC – N, x/x/2004]

**19.25.12.4 DURATION:** Permanent.
[19.25.12.4 NMAC – N, x/x/2004]

**19.25.12.5 EFFECTIVE DATE:** XX-XX- 2004 unless a later date is indicated at the end of a section.
[19.25.12.5 NMAC – N, x/x/2004]

**19.25.12.6 OBJECTIVE:** To establish minimum design requirements, minimum submittal requirements and dam site owner responsibilities that shall be addressed to the state engineer's satisfaction in order to ensure a dam is designed, constructed, operated, maintained and secured in a safe manner.
[19.25.12.6 NMAC – N, x/x/2004]

**19.25.12.7 DEFINITIONS:** Unless defined below or in a specific section of these regulations, all other words used herein shall be given their customary and accepted meaning.

**A. Abutment:** That part of the valley side against which the dam is constructed. The left and right abutments of dams are defined with the observer viewing the dam looking in the downstream direction.

**B. Alteration, modification, repair, rehabilitation or enlargement of an existing dam:** To make different from the state engineer accepted construction drawings and specifications or current condition.

**C. Appurtenant structure:** Ancillary features of a dam such as outlets, spillways, access structures, tunnels and related housing at a dam.

**D. American society for testing and materials (ASTM):** An accepted standard for testing the properties of materials. Methods cited in these regulations include laboratory compaction characteristics of soils.

**E. Breach:** An opening through a dam or spillway that is capable of draining a portion of the reservoir or the entire reservoir. A controlled breach is a constructed opening. An uncontrolled breach is an unintentional discharge from the reservoir.

**F. Consequences of failure:** Potential loss of life or property damage downstream of a dam caused by waters released at the dam or by waters released by partial or complete failure of dam; includes effects of landslides upstream of the dam on property located around the reservoir.

**G. Crest width:** The thickness or width of a dam at the crest level (excluding corbels or parapets). In general, the term thickness is used for gravity and arch dams and width is used for other dams.

**H. Dam:** A man-made or barrier constructed across a watercourse or off-channel for the purpose of storage, control or diversion of water.

**(1) Jurisdictional dam:** A dam that is more than ten feet in height measured from the lowest point on the downstream toe to the dam crest or impounds more than 10 acre-feet of water as measured from the lowest point on the downstream toe to the spillway crest. Exceptions are made for erosion control dams that store less than or equal to 10 acre-feet and are maintained in a safe condition. Dams constructed under the supervision of the U.S. army corps of engineers before May 7, 2004, become jurisdictional when such supervision by the U.S. army corps of engineers is terminated. For purposes of these regulations, reference to a dam means a jurisdictional dam unless otherwise noted.

**(2) Non-jurisdictional dam:** Any dam less than or equal to 10 feet in height measured from the lowest point on the downstream toe to the dam crest and impounding less than or equal to 10 acre-feet measured from the lowest point on the downstream toe to the spillway crest. The state engineer does not regulate the design, construction and operation of a non-jurisdictional dam unless the dam is unsafe and there is a threat to life or property, as determined by the state engineer. Waters impounded by a non-jurisdictional dam are not exempt; therefore a separate state engineer permit for the water impounded in the reservoir created by a non-jurisdictional dam is required. The structures listed below are considered non-jurisdictional dams:

**(a) Erosion control dam:** A dam for the sole purpose of erosion control constructed on a naturally dry watercourse as determined by the state engineer, with a storage capacity of 10 acre-feet or less as measured from the lowest point on the downstream toe to the spillway crest and the reservoir drains in 96 hours unless a quicker drain time is required by court decree.

**(b) Levee or diversion dike:** A structure where water flows parallel to the length of the levee or diversion dike as determined by the state engineer.

**(c) Roadway embankment:** A structure across a watercourse design for the sole purpose of supporting a roadbed or other means of conveyance for transportation as determined by the state engineer; where the area upstream has not been enlarged to increase flood storage; and where the embankment is provided with an uncontrolled conduit of sufficient capacity to satisfy requirements of the appropriate state or local transportation authority. In lieu of transportation authority requirements, the conduit must be capable of draining the 100-year runoff event from the entire area upstream of the embankment in less than 24 hours and capable of passing a 100-year runoff event without overtopping the embankment.

**I. Dam crest:** The lowest elevation of the uppermost surface of a dam, usually a road or walkway excluding any parapet wall, railing, etc.

**J. Dam failure:** The catastrophic breakdown of a dam, characterized by the uncontrolled release of impounded water. There are varying degrees of failure.

**K. Dam height:** The height from the lowest point on the downstream toe to the dam crest.

**L. Dam incident:** An event at a dam that interrupts normal procedures and performance, affects the safety of the dam or results in a potential loss of life or damage to property.

**M. Freeboard:** For purposes of these regulations, freeboard is defined as the vertical distance between the spillway crest and the lowest point of the top of the dam not including camber.

**N. High water line:** The highest water level elevation in the reservoir as determined from routing the spillway design flood or inflow design flood.

**O. Inflow design flood:** The flood flow above which the incremental increase in downstream water surface elevation due to failure of a dam is no longer considered to present an unacceptable additional downstream threat. The upper limit of the inflow design flood is the probable maximum flood and the lower limit is the 100-year flood.

**P. Inundation map:** A map delineating the area that would be flooded by a particular flood event.

**Q. Length of dam:** The length measured along the dam axis at the top of dam. This also includes the spillway, powerplant, navigation lock, fish pass, etc., where these form part of the length of the dam. If detached from the dam these structures should not be included.

**R. Loss of life:** The likely number of human fatalities that would result from a dam failure flood event. No allowances for evacuation or other emergency actions by the population should be considered.

**S. Naturally dry watercourse:** A watercourse or portion thereof, which under normal conditions is dry, which flows only in direct response to precipitation and whose channel is at all times above the groundwater table.

**T. Normal operating level:** The water level elevation corresponding to the maximum storage level that excludes any flood control or surcharge storage.

**U. North American vertical datum 1988 (NAVD88):** The current vertical control datum in use in North America established from nine space geodetic stations. This basis of establishing elevation provides a precise surface, whereas the North American vertical datum 1927 (NAVD27) is elevation established from mean sea level.

**V. One-hundred year flood:** A flood that has 1 chance in 100 of being equaled or exceeded during any year.

**W. Owner:** The individual, association or corporation, public or private, the state or the United States, owning the land upon which a dam is constructed; having a contractual right to construct, operate or maintain a dam; or the beneficiary of an easement to construct, operate or maintain a dam.

**X. Probable maximum flood:** The flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the drainage basin under study.

**Y. Probable maximum precipitation:** Theoretically, the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular location during a certain time of year.

**Z. Spillway:** A structure over or through which flow is discharged from a reservoir. If the rate of flow is controlled by mechanical means such as gates, it is considered a controlled spillway. If the geometry of the spillway is the only control, it is considered an uncontrolled spillway. For purposes of these regulations, an uncontrolled outlet conduit that is used to drain the reservoir is not considered a spillway.

**AA. Spillway crest:** The lowest level at which water can flow over or through the spillway.

**BB. Spillway design flood:** The required flood that a spillway must pass without failure of the dam.

**CC. State engineer:** The state engineer has general supervision of waters of the state and of the measurement, appropriation, distribution thereof and such other duties as required, including dam safety. For purposes of these regulations, reference to the state engineer includes staff and duly appointed representatives of the office of the state engineer.

**DD. Storage:** For purposes of determining whether a dam is jurisdictional, the storage is the volume of water impounded by the dam above the lowest elevation of the downstream toe to the elevation of the spillway crest. Definitions of specific types of storage in reservoirs are:

**(1)** Dead storage is the storage volume of a reservoir that lies below the invert of the lowest outlet and therefore, cannot readily be withdrawn from the reservoir.

**(2)** Flood surcharge storage is the storage volume between the maximum operating level and the maximum water level during the spillway design flood.

**(3)** Live storage is the storage volume of a reservoir that is available for use and lies above the invert of the lowest outlet.

**(4)** Reservoir storage capacity is the sum of the dead and live storage of the reservoir.

**(5)** Maximum storage is the sum of the reservoir storage capacity and flood surcharge storage.

**EE. Toe:** For purposes of these regulations, the toe is the contact line between the outer shell of the dam and the natural ground surface.

**FF. Water:** For purposes of these regulations, water includes any substance that may be impounded by a dam including but not limited to tailings, slimes, organic waste, sewage or any other potentially mobile fluid or semi-fluid substance.

**GG. Wave runup:** Vertical height above the water level to which water from a specific wave will run up the face of a structure or embankment.

[19.25.12.7 NMAC – N, x/x/2004]

**19.25.12.8 FEE SCHEDULE:** The state engineer assesses fees for filing forms, reviewing plans and specifications for dams and appurtenances and construction inspections.

**A.** For filing an application to construct and operate a dam the fees shall be $25.

**B.** For each review of design plans, construction drawings and specifications for a dam the fee shall be $2 per $1000 or fraction thereof of the estimated construction cost. For determination of fees, inclusion of contingencies, taxes and other permit fees is not required. Assessment of multiple review fees for the same application is at the sole discretion of the state engineer.

**C.** For issuing an extension of time the fee shall be $25.

**D.** For inspecting construction the fee shall be $100/8-hour day or fraction thereof.

**E.** For filing a proof of completion of works for a dam the fee shall be $25.

**F.** For filing a change of ownership for a dam the fee shall be $5.

**G.** For copies of dam safety records up to 11 inches by 17 inches the fee shall be $0.20 per copy.

**H.** For copies of dam safety records greater than 11 inches by 17 inches the fee shall be $3.00 per copy.

[19.25.12.8 NMAC – N, x/x/2004]

**19.25.12.9 SIZE CLASSIFICATION:** A dam shall be less than or equal to the maximum height and storage to qualify for the size classification.

**A. Small:** A small dam is greater than 10 feet but less than or equal to 40 feet in height, or greater than 10 acre-feet but less than or equal to 1000 acre-feet of storage.

**B. Intermediate:** An intermediate dam is greater than 40 feet but less than or equal to 100 feet in height, or greater than 1000 acre-feet but less than or equal to 50,000 acre-feet of storage.

**C. Large:** A large dam is greater than 100 feet in height, or greater than 50,000 acre-feet of storage.

[19.25.12.9 NMAC – N, x/x/2004]

**19.25.12.10 HAZARD POTENTIAL CLASSIFICATION:** The hazard potential classification is a rating for a dam based on the potential consequences of failure. The rating is based on loss of life, damage to property and environmental damage that is likely to occur in the event of dam failure. The hazard potential classification is not a reflection of the condition of the dam.

**A. Low hazard potential:** Dams assigned the low hazard potential classification are those dams where failure or misoperation results in no probable loss of life and low economic and/or environmental losses. Losses are principally limited to the dam owner's property.

**B. Significant hazard potential**: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in populated areas with significant infrastructure.

**C. High hazard potential:** Dams assigned the high hazard potential classification are those dams where failure or misoperation will probably cause loss of human life.

[19.25.12.10 NMAC – N, x/x/2004]

**19.25.12.11 DESIGN OF A NEW DAM:** Any person, association or corporation, public or private, the state, or the United States that is intending to construct a dam shall submit supporting documentation acceptable to the state engineer. This section primarily addresses the design and construction of embankment dams. Other types of dams shall conform to sound engineering principles and current state of the practice. Construction shall not begin until the state engineer has accepted the supporting documentation and approved the application with construction and operation conditions. The supporting documentation shall include:

**A. Application:** An application form shall be completed with original signature of the dam owner and accompanied with a filing fee in accordance with Subsection A of 19.25.12.8 NMAC. The form will be the only information available to the public before the project is approved for construction. All other supporting documentation is considered draft until accepted by the state engineer. A plan review fee in accordance with Subsection B of 19.25.12.8 NMAC shall accompany the submittal of the design report, construction drawings and specifications. A detailed estimate of the construction cost for the proposed dam and appurtenances shall be submitted in support of the plan review fee.

**B. Water right permit:** Documentation of a water right permit shall be submitted for water impounded by the dam. If the dam owner has a permit for the diversion of water, documentation from the state engineer addressing the necessity for storage, diversion periods and release conditions for the reservoir is required. This requirement is waived for flood control dams that drain in 96 hours in accordance with Subparagraph (b) of Paragraph (7) of Subsection C of 19.25.12.11 NMAC or provide documentation that a waiver by the state engineer has been granted. Flood control dams that do not drain within 96 hours require a water right permit for water stored beyond the 96-hour drain time requirement and for associated losses due to evaporation and other potential depletions to the system. If environmental consequences prevent draining of the flood control reservoir, the state engineer will require a water right permit.

**C. Design report:** A design report, which includes information to evaluate the safe design of the dam and appurtenances shall be submitted in a form acceptable to the state engineer. The design report shall contain the information described below and any other additional information determined necessary by the state engineer. Because each site, design and operating practice is unique, waivers will be considered on a case-by-case basis. Request for waiver shall be in writing accompanied with documentation justifying the request. If the request is not justified to the satisfaction of the state engineer the request will be denied. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare or supervise the preparation of the design report. The front cover shall show the name of the dam (identical to the application), the county in which the dam is located and type of report. The first page behind the front cover shall show the name of the dam (identical to the dam name on the application), the county in which the dam is located and the certification of the professional engineer licensed in the state of New Mexico bearing his signature and seal in accordance with Subsection B of 19.25.12.12 NMAC. This page shall also bear the signature of the state engineer or his representative in accordance with Subsection E of 19.25.12.12 NMAC.

**(1)** Hazard potential classification. A hazard potential classification shall be based on the dam failure condition that results in the greatest potential for loss of life and property damage. If the state engineer concurs that the hazard potential classification is obvious, the classification may be based on the judgment and recommendation of the professional engineer. For all other cases, the hazard potential classification shall be supported by a dam breach analysis, which includes calculations and data that supports the predicted dam failure flood. This analysis shall also address the potential for future development. Evaluation of the effects of flooding from dam failure shall extend at least to the location downstream where the classification can be properly identified. The dam breach analysis shall include, but not be limited to:

**(a)** dam failure inundation maps;

**(b)** map of the water surface profiles;

**(c)** cross-sections drawn to scale showing water surface elevation at critical sections where structures are impacted and showing discharge in cubic feet per second, average velocity in feet per second, flood wave travel times, rate of rise and structures located in the flooded sections;

**(d)** a tabulation of assumed parameters used in the analysis and justification;

**(e)** a sensitivity analysis of the assumed parameters used in the analysis;

**(f)** references for all programs, data and supporting justification used in the analysis; and

**(g)** appropriate data sheets and computer program output computations from computerized analysis shall be provided.

**(2)** Hydrologic analysis. The hydrologic analysis shall present the spillway design flood for determining the available flood storage and spillway capacity. Consideration of how the dam will perform under flood conditions shall be evaluated. The hydrologic analysis shall include, but not be limited to:

**(a)** a topographic map of the drainage area above the dam with the drainage area and sub-basins delineated and presented on a map of appropriate scale and size;

**(b)** a description of the topography, soils and vegetative cover of the drainage area;

**(c)** a discussion of the depth, duration and distribution of the spillway design storm; the probable maximum precipitation shall be used to determine the probable maximum flood for a duration that provides the most critical condition; the 100-year storm event flood shall be used to determine the 100-year flood event for a duration that provides the most critical condition;

**(d)** a discussion and justification of all hydrologic parameters for the method used to calculate runoff from rainfall;

**(e)** a discussion of the peak inflow, volume of runoff and maximum reservoir water level elevation for the inflow hydrograph;

**(f)** a plot of the reservoir inflow and outflow hydrographs extended until flow is negligible and plotted on the same figure of appropriate size and scale; for flood control structures, the time of peak reservoir storage shall be shown on the outflow hydrograph to determine the time to drain the reservoir;

**(g)** a table showing the reservoir area (in acres) and storage capacity (in acre-feet) for each foot of elevation above the bottom of the reservoir to the dam crest; the table shall be determined from the reservoir topography map; indicate the amount of dead storage, elevation of the invert of the outlet and elevation of the crest of each spillway; all elevations shall be based on North American vertical datum 1988 or more recent adjustment; and

**(h)** appropriate data sheets and computer program output computations from computerized analysis shall be provided.

**(3)** Spillway design flood. The spillway design flood is the required flood that a spillway must convey without dam failure. In cases where no spillway is provided, the dam must be capable of impounding the spillway design flood without dam failure. A spillway design flood less than these requirements is acceptable to the state engineer if an incremental damage analysis is presented to justify the inflow design flood in accordance with Paragraph (4) of Subsection C of 19.25.12.11 NMAC. The spillway design flood is based on size classification and hazard potential classification of the dam as follows:

**(a)** Dams classified as low hazard potential, regardless of size, shall have spillways designed to pass a 100-year flood expressed as a percentage of the probable maximum flood.

**(b)** Dams classified as small and intermediate, with a significant hazard potential rating shall have spillways designed to pass 50 percent of the probable maximum flood.

**(c)** Dams classified as large, with a significant hazard potential rating shall have spillways designed to pass 75 percent of the probable maximum flood.

**(d)** Dams classified as high hazard potential, regardless of size, shall have spillways designed to pass the probable maximum flood.

**(4)** Incremental damage assessment. Where spillways are not in compliance with Paragraph (3) of Subsection C of 19.25.12.11 NMAC an incremental damage assessment shall justify the inflow design flood used to size the spillway. The assessment shall evaluate the consequences of dam failure based on the dam being in place and shall compare the impact of with-failure and without-failure conditions on existing development and known and prospective future development. The assessment shall include a dam breach analysis in accordance with Subparagraphs (a) through (g) of Paragraph (1) of Subsection C of 19.25.12.11 NMAC for the failure and non-failure conditions. Methods for assessing the damage between failure and non-failure conditions shall be fully documented.

**(5)** Spillway capacity. The spillway capacity shall be adequate to pass the spillway design flood in accordance with Paragraph (3) of Subsection C of 19.25.12.11 NMAC or accepted inflow design flood in accordance with Paragraph (4) of Subsection C of 19.25.12.11 NMAC without failure of the dam. If design calculations show that overtopping will occur, an erosion study of the embankment documenting that the dam will not breach is required. If the outlet works are gated, the design discharge of the outlet works shall not be considered when routing the spillway design flood through the reservoir and spillway. The water level shall be at the normal operating level at the beginning of the spillway design storm. A spillway rating curve and table showing elevation in one-foot increments versus maximum discharge capacity shall be prepared. The rating curve and table shall include data from the crest of the spillway to the dam crest. The parameters used to calculate the spillway capacity shall be justified and appropriate data sheets and computer program output computations from computerized analysis shall be provided. Elevations shall be based on North American vertical datum 1988 or more recent adjustment.

**(6)** Spillway design. Spillways shall be evaluated for erosion potential during normal operation and the design flood event. Damage to a spillway during the design flood is acceptable if adequate justification is provided. A breach of the spillway is unacceptable. The spillway design shall address the following minimum requirements:

**(a)** The material required for spillway lining depends on the spillway location, frequency of discharge and velocity of discharge to adequately address erosion and breach potential. The design shall provide adequate justification for the material selected.

**(b)** The design shall provide aeration of the nappe for cavitation control where control weirs are used at the spillway crest.

**(c)** The spillway must discharge away from the toe of the dam and abutment slopes.

**(d)** The potential for the accumulation of debris that may block the spillway shall be addressed.

**(e)** Where training dikes are used to divert the water away from the dam, the dike shall be designed with a compaction to at least 95% of the maximum standard Proctor density, ASTM D 698, or at least 90% of the maximum modified Proctor density, ASTM D 1557, or at least 70% relative density if Proctor testing is not appropriate. Erosion protection for the dike shall be addressed in accordance with Paragraph (16) of Subsection C of 19.25.12.11 NMAC.

**(f)** Energy dissipation to control erosion of the natural channel due to spillway discharge shall be addressed.

**(g)** Channel lining shall be placed on a suitably prepared, stable subgrade. All edges and joints in channel lining material must be designed to prevent undermining and erosion. Concrete channel lining must be provided with adequate jointing to permit thermal expansion and contraction and adequate reinforcing to control thermal cracking. Adequate water stops are required at joints in the spillway lining. Concrete lining shall be

adequately anchored against displacement and uplift and shall be provided with adequate subdrainage to relieve hydrostatic pressure and prevent frost heave.

**(7)** Outlet works capacity. Dams shall be designed with a low level outlet to drain the entire contents above the elevation of the downstream toe of the dam. If environmental consequences prevent draining of the reservoir, the state engineer will grant a waiver if written justification is provided to the satisfaction of the state engineer. The outlet shall be sized to provide adequate capacity to satisfy water rights of downstream priority users. A stage discharge curve and table showing elevation in one-foot increments versus discharge capacity shall be prepared. The rating curve and table shall be from the invert of the outlet to the dam crest. The parameters used to calculate the outlet works capacity shall be justified and appropriate data sheets and computer program output computations from computerized analysis shall be provided. Elevations shall be based on North American vertical datum 1988 or more recent adjustment. The outlet works capacity shall meet the following minimum requirements:

**(a)** Outlets for water storage reservoirs shall drain in 45 days with supporting calculations provided.

**(b)** Outlets for flood control dams shall drain the reservoir in 96 hours unless a waiver is granted by the state engineer. The 96-hour time frame begins once the reservoir storage reaches its peak during any storage event. Documentation supporting the waiver shall include time to drain more frequent events.

**(8)** Outlet works design. The outlet works design includes the intake structure, conduit and terminal structure. The outlet works design shall meet the following minimum requirements:

**(a)** Minimum conduit diameter is 18 inches unless a waiver is granted by the state engineer. Documentation supporting a waiver shall include identification of methods to inspect the interior of the conduit.

**(b)** Metal conduits used in dams that are classified as significant hazard potential where the sole purpose of the dam is flood control, or in dams classified as low hazard potential, shall have adequate strength after corrosion for a minimum of 200 years, based on corrosivity testing of onsite soils. Cathodic or other protection of metal conduits is permissible and may be considered in this analysis. Metal conduits are not acceptable for dams classified as high hazard potential or dams classified as significant hazard potential with permanent water storage except as interior forms for cast-in-place concrete conduits.

**(c)** Outlet conduits for storage reservoirs shall be gated at the upstream end unless a waiver is granted by the state engineer. Where gates are located other than at the upstream end of the conduit, a guard gate or bulkhead shall be provided at the upstream end to allow draining of the conduit for inspection, maintenance and repair.

**(d)** Outlet conduits shall be adequately vented. Where the outlet conduit ties directly to a downstream pipe, a by-pass valve shall be provided.

**(e)** Outlet control operators and equipment shall be properly designed to be secure from damage due to vandalism, weather, ice, floating debris, wave action, embankment settlement and other reasonably foreseeable causes. The outlet control operators shall remain accessible during outlet works and spillway releases.

**(f)** Outlets for flood control structures shall be ungated. Where a gate is required to satisfy downstream release restrictions, a waiver from the state engineer is required. The written request for waiver shall include a plan for timely release of the floodwater.

**(g)** Outlet works intake structures shall be provided with trash racks or grates to prevent clogging with debris. Grate opening size or bar spacing shall be adequate to satisfy applicable public safety requirements, if appropriate. Total size of grate openings must be at least three times the cross-sectional area of the outlet conduit.

**(h)** The design of the outlet works terminal structure shall address energy dissipation to prevent erosion and shall include supporting calculations.

**(i)** Outlet conduits shall be designed for full embankment loading and for hydrostatic pressure equal to the maximum reservoir head, acting separately and in combination, with an adequate factor of safety for the conduit material. If future increases in embankment height and/or reservoir head are foreseeable, allowance shall be made in the design.

**(j)** The conduit together with all joints and fittings shall be watertight at the design pressure and shall be pressure tested prior to backfilling. Conduits shall be designed for all reasonably foreseeable adverse conditions including corrosion, abrasion, cavitation, embankment settlement and spreading, thermal effects and seismic loading. The ability of the conduit to withstand deflection and separation at the joints shall be addressed in the design of the outlet conduit.

**(k)** Outlet works shall be supported by stable, well-consolidated foundation materials. Where the conduit is placed in embankment fill or native overburden materials, settlement analysis shall be performed.

**(l)** Minimizing seepage along conduits shall be addressed including the methods for ensuring compaction of backfill around and beneath the conduit.

**(m)** All supporting documentation and calculations for the outlet works design shall be provided. The outlet works design shall include all foreseeable loading conditions, including but not limited to ice loading, debris buildup, wave action and embankment settlement. Structural design calculations for the intake structure, conduit and outlet structure shall be submitted.

**(9)** Geological assessment. A geological assessment of the dam and reservoir site is required for all dams classified as high or significant hazard potential. The geological assessment may be included in the geotechnical investigation or seismic study, or may be submitted as a separate document. The geological assessment shall address regional geologic setting; local and site geology; geologic suitability of the dam foundation; slide potential of the reservoir rim and abutment areas; and seismic history and potential.

**(10)** Geotechnical investigation. A geotechnical investigation shall assess site conditions and support the design. A professional engineer licensed in the state of New Mexico qualified to provide geotechnical expertise in the design and construction of dams shall prepare, stamp and sign the geotechnical investigation, which may be submitted as a separate report. The scope of the geotechnical investigation is dependent on the size classification, hazard potential classification, anticipated materials and construction methods, site geology and seismicity, anticipated soil strata and other site-specific conditions. The geotechnical investigation shall include a field investigation and laboratory testing. Results of field and laboratory testing shall be presented in a report, including recommended parameters to be used in design and construction of the dam and appurtenances. The field investigation and laboratory testing shall include but not be limited to the following:

**(a)** test borings in the footprint of the embankment, spillway excavations and appurtenances extending to bedrock or to a depth equal to at least the height of the dam; where appropriate, borings may include coring of bedrock materials to determine the quality and character of the rock;

**(b)** standard penetration tests or other field-testing to assess soil character and consistency;

**(c)** "undisturbed" sampling for further tests such as insitu density, shear strength and compressibility;

**(d)** supplemental test pits, if deemed necessary, to obtain bulk and undisturbed samples, assess soil layering and measure bedrock orientation;

**(e)** measurement of water level in drill holes;

**(f)** field permeability testing, if feasible;

**(g)** logs of test borings and test pits, location map and profile along dam axis with soil information shown;

**(h)** testing to determine the relevant properties of the material to be used in construction, including but not limited to shear strength, permeability, compressibility and filter characteristics; the testing method shall conform to accepted industry standards and be appropriate for the material being tested;

**(i)** evaluation of liquefaction potential and dynamic shear strength testing if deformation analysis is required; and

**(j)** identification of the location of the borrow material to be used during construction.

**(11)** Seepage and internal drainage. The effects of seepage and potential for internal erosion shall be evaluated. A seepage analysis shall be performed to address the performance of the embankment under steady-state conditions for dams classified as high or significant hazard potential. A waiver may be requested in writing for flood control dams or reservoirs with synthetic liners. The seepage analysis and internal drainage design shall include but not be limited to the following:

**(a)** Flow nets of appropriate size and scale shall be prepared. The effects of anisotropy with respect to permeability shall be addressed. Field and laboratory permeability testing shall be provided to support ratios of horizontal to vertical permeability of less than 4 for constructed embankments and less than 9 for native deposits. Appropriate data sheets and computer program output computations from computerized analysis shall be provided.

**(b)** The design shall address the effects of anticipated seepage beneath, around and through the dam. Seepage shall not exit on the dam face and excessive exit seepage gradients are unacceptable. All filter, transition and drainage zones within earth dams shall have a thickness adequate to address constructability and enhance seismic stability with a minimum thickness of 3 feet for each zone.

**(c)** Collector pipes and conduits for internal drains shall be made of non-corrodible material capable of withstanding the anticipated loads. If possible, pipes shall be located where they can be exposed for repair or replacement without threatening the stability of the dam. Collector pipes for drains shall be enveloped in a

free-draining medium meeting filter criteria for adjacent embankment or foundation zones. Where surging or hydraulic gradient reversal is likely, perforation size must be less than the diameter at which 15 percent of the surrounding medium is finer. Where surging or hydraulic gradient reversal are unlikely, the perforation size must be less than the diameter at which 85 percent of the surrounding medium is finer.

**(d)** Drain pipes shall be sized to provide a flow depth no more than ¼ of the pipe diameter when carrying the anticipated discharge. Drain pipes shall be at least 6 inches in diameter unless the availability of technology for inspection and maintenance can be demonstrated. Individual pipes shall discharge to a gallery, well, manhole, or to daylight such that the flow of each pipe can be monitored and measured. Manifold connections, tees and wyes are not permitted. If the anticipated flow from a drain line exceeds 10 gpm, a measuring flume or weir shall be provided for that line. If the anticipated flow from a drain line is less than 10 gpm, the outfall shall be designed to allow a 5 gallon bucket to be used to collect and measure discharge. Where pipes from internal drains are discharged to daylight, a rodent screen shall be provided.

**(12)** Stability analysis. Cross-sectional design for dams shall be supported by slope stability analysis. Dams classified as low hazard potential with upstream slopes no steeper than 3 horizontal to 1 vertical, downstream slopes no steeper than 2 horizontal to 1 vertical and which are 25 feet or less in height will not require slope stability analysis. The analysis model shall adequately represent the geometry and zoning, shear strength parameters, material unit weights, pore pressure and seepage conditions, external loading and other relevant factors of the critical cross section or sections. Manual computations in the analysis will be accepted if judged to be sufficiently rigorous. Where appropriate, the analysis shall consider noncircular or block and wedge type failure surfaces as well as circular failures. All parameters and assumptions used in the analysis shall be summarized in a table and justified in the geotechnical investigation. A scale drawing, utilizing the same scale for vertical and horizontal dimensions, shall be provided for each cross-sectional model used in the analysis, with the critical failure surface(s) identified. Appropriate data sheets and computer program output computations from computerized analysis shall be provided. Dams shall be designed to provide the following minimum factors of safety from the stability analysis:

**(a)** 1.5 for steady state long-term stability;

**(b)** 1.5 for operational drawdown conditions;

**(c)** 1.2 for rapid drawdown conditions; and

**(d)** 1.2 for end of construction.

**(13)** Seismic design and analysis. Dams classified as high or significant hazard potential shall be analyzed for seismic stability. Seismic analysis for water storage dams shall be based on full reservoir under steady state seepage conditions. Flood control dams with ungated outlets that satisfy Subparagraph (b) of Paragraph (7) of Subsection C of 19.25.12.11 NMAC without waiver shall be designed for earthquake loads under full reservoir conditions, but need not consider steady-state seepage. Dams sited on active faults shall obtain a waiver from the state engineer. To obtain a waiver the analysis shall show that the location of the dam is unavoidable and the dam must be designed to withstand anticipated fault movement without compromising its integrity. Appropriate data sheets and computer program output computations from computerized analysis shall be provided. The seismic analysis shall meet the following minimum requirements:

**(a)** A seismological investigation for the dam area and reservoir area. This study may be part of the geological or geotechnical report for the structure, or may be a separate effort. The study shall determine and justify the appropriate seismic parameters to be used for design. The seismic parameters shall be based on the following design earthquake:

**(i)** Dams classified as high hazard potential other than flood control structures shall be designed for the maximum credible earthquake or for an earthquake with a 5000-year return frequency.

**(ii)** Dams classified as significant hazard potential or high hazard potential dams whose sole purpose is for flood control shall be designed for a 2% chance of occurrence in 50 years (approx. 2500-year return frequency).

**(b)** An analysis of materials in the foundation, reservoir area and proposed embankment shall be completed to determine the potential for liquefaction, earthquake-induced sliding, or other seismic sensitivity, which may be accomplished as part of the geotechnical investigation.

**(c)** Pseudostatic analysis will be acceptable for the following cases:

**(i)** the embankment is to be mechanically compacted to at least 95% of the maximum standard Proctor density, ASTM D 698, or at least 90% of the maximum modified Proctor density, ASTM D 1557 (or at least 70% relative density if Proctor testing is not appropriate); no materials prone to liquefaction are present in the foundation and peak bedrock acceleration is 0.20g or less; or

**(ii)** the embankment is to be mechanically compacted to at least 95% of the maximum

standard Proctor density, ASTM D 698, or at least 90% of the maximum modified Proctor density, ASTM D 1557; potentially submerged portions of the embankment except for internal drain elements are constructed of clayey material; the dam is constructed on clayey soil or bedrock foundation and peak bedrock acceleration is 0.35g or less; and

**(iii)** all safety factor requirements in accordance with Subparagraphs (a) through (d) of Paragraph (12) of Subsection C of 19.25.12.11 NMAC are met;

**(iv)** minimum freeboard requirements in accordance with Subparagraphs (a) through (e) of Paragraph (15) of Subsection C of 19.25.12.11 NMAC are met; and

**(v)** the pseudostatic coefficient selected for analysis must be at least 50% of the predicted peak bedrock acceleration, but not less than 0.05g; factor of safety under pseudostatic analysis shall be 1.1 or greater; in determining the factor of safety for pseudostatic analysis, a search for the critical failure surface shall be made.

**(d)** For dams not satisfying the requirements for pseudostatic analysis, a deformation analysis is required. The resulting embankment must be capable of withstanding the design earthquake without breaching and with at least 3 feet of freeboard remaining after deformation. The analysis shall also assess the potential for internal erosion as a result of cracking during deformation.

**(e)** The seismic assessment shall also address the stability of appurtenances to the dam during the design earthquake as appropriate, unless failure of an appurtenance due to earthquake does not represent an immediate threat to the dam, in which case the operating basis earthquake may be used.

**(14)** Dam geometry. The dam geometry shall be supported by the stability and seismic analysis and meeting the following minimum requirements:

**(a)** The crest width shall be at least equal to the dam height in feet divided by 5 plus 8 feet, with the minimum permissible crest width being 10 feet and the maximum required crest width being 24 feet.

**(b)** Roads located on the crest shall have appropriate surfacing to provide a stable base that resists rutting and provides adequate friction for safety in wet conditions.

**(c)** The crest design shall provide a minimum of 2 feet of cover or the depth of frost penetration; whichever is greater, above clay cores to prevent cracking of the core due to desiccation or frost penetration.

**(d)** Turnarounds should be provided on dead-end service roads on dam crests, located in such a manner that backing maneuvers longer than 300 feet are eliminated.

**(e)** The crest shall be provided with adequate cross slope to prevent ponding.

**(f)** The slope or slopes to which crest drainage is directed must be provided with adequate erosion protection to accept the crest drainage.

**(g)** The crest longitudinal profile shall be provided with adequate camber to maintain the profile after embankment settlement. Camber should be based on settlement analysis and shall be at least 2 percent of the total embankment height, with a minimum of 1 foot at the highest point of the dam. The tops of internal core zones shall also be provided with camber in a similar manner to the crest of the dam.

**(h)** In the event that safety berms, street curbs, or other longitudinal features which block, control, or concentrate drainage are required on the dam crest, the design shall provide for collection and conveyance of accumulated water to discharge away from the embankment without erosion.

**(15)** Freeboard. Dams shall be provided with adequate freeboard. Wave runup shall be determined taking into consideration wind speed, reservoir fetch, embankment slope and roughness of the slope surface. Freeboard shall satisfy the following conditions:

**(a)** Anticipated wave runup resulting from a 100 mph wind with reservoir level at the spillway crest will not overtop the dam.

**(b)** Anticipated wave runup resulting from a 50 mph wind with maximum reservoir level from routed spillway design flood will not overtop the dam.

**(c)** Clay core cover and capillary rise requirements are satisfied.

**(d)** A minimum of 3 feet of freeboard remains after seismic deformation.

**(e)** In any case, at least 4 feet of freeboard shall be provided. The minimum of 4 feet of freeboard may be waived for perimeter embankments with no spillway, provided a written request is made to the state engineer with supporting justification.

**(16)** Erosion protection. Erosion protection shall be addressed to protect the dam and appurtenances from erosion that can threaten the safety of the structure. At a minimum, the following areas of erosion shall be addressed:

**(a)** Wave erosion. The upstream slope shall be protected from wave erosion. The material selected and area of coverage shall be appropriate for the protection required with justification provided. Flood control dams in compliance with Subparagraph (b) of Paragraph (7) of Subsection C of 19.25.12.11 NMAC without waiver are exempt from wave protection.

**(b)** Surface erosion. The slope, crest, abutment and groins, toe areas and any other constructed areas associated with the dam and appurtenances shall be protected from surface erosion and concentrated flows. The material selected and area of coverage shall be appropriate for the protection required with justification provided.

**(17)** Geotextile design. Geotextiles are an acceptable material for use in dam design if the geotextile is placed so that it does not jeopardize the dam or appurtenances during repair or failure of the geotextile. The geotextile material shall be used in accordance with the manufacturer's recommendations and intended use for the product. Installation shall be by certified personnel and the completed installation certified by installer or manufacturer, if required by the manufacturer.

**(18)** Structural design. The structural design information for all appurtenances, addressing water, earth, ice and any other applicable load shall be provided. Reinforced concrete design including assumptions for loads and limiting stresses and sample calculations shall be provided. Appropriate data sheets and computer program output computations from computerized analysis shall be provided.

**(19)** Utilities design. Utility placement or relocation shall be addressed as applicable. Utilities located in the vicinity of the proposed embankment footprint should be relocated and trenches backfilled and compacted with suitable material to the satisfaction of the state engineer. If utilities are allowed to remain, they will be required to satisfy applicable provisions for outlet conduits in accordance with Paragraph (8) of Subsection C of 19.25.12.11 NMAC.

**(20)** Miscellaneous design. Because each design is unique, all design elements not specifically addressed in these regulations shall be documented and justified with sample calculations and appropriate data sheets and computer program output computations from computerized analysis shall be included in the design report.

**D. Construction drawings:** A professional engineer licensed in the state of New Mexico qualified in dam design and construction shall prepare the construction drawings. Illegible, mutilated, careless or otherwise poorly prepared drawings are not acceptable for filing with the state engineer. Plan drawings and maps prepared with the aid of a computer require the submittal of the digital data files in tagged image file format or other format acceptable to the state engineer. The preparation of construction drawings is described below and shall include the following information:

**(1)** Quality. Construction drawings and maps shall be made from actual field or photogrammetric surveys of an accuracy acceptable to the state engineer. Construction drawings and maps shall be prepared with permanent black ink on mylar. All original signatures, dates and acknowledgments appearing on the sheet(s) shall be in permanent ink. Plan drawings and maps shall always be rolled, never folded, for transmittal.

**(2)** Scale and size. Sheets shall be mylar and shall be twenty-four (24) inches by thirty-six (36) inches with one (1) inch margins on all sides. The scale(s) used on the drawings may vary according to requirements and space available to show all necessary data in detail clearly in feet and decimals and to be clearly legible when reduced to eleven (11) inches by seventeen (17) inches. Detailed dimensions of appurtenances shall be given in feet and inches. All sheets shall have bar scales in order to allow scaling of reduced drawings.

**(3)** Sheet numbers. Each sheet shall be numbered sequentially with the first sheet being sheet number one in conjunction with the total numbered sheets (example Sheet 1 of 5). The sheet number on the last sheet shall equal the total number of sheets.

**(4)** Engineer's seal and signature. Each sheet shall have the responsible engineer's seal and signature.

**(5)** Orientation and date. The direction of north and the basis of bearings shall be shown on all maps. The date that field surveys are made or the date of the aerial photography used shall be shown on the maps.

**(6)** Title sheet. The first sheet of a set of plans is the title sheet. The title sheet shall only contain sufficient information to summarize the scope of the project, the title of the project and signed certifications for the dam owner, engineer and state engineer in accordance with Subsections A, B and E of 19.25.12.12 NMAC. The title sheet shall summarize the properties of the dam and shall include the following information, as appropriate:

**(a)** name of the dam (same as shown on the application);

**(b)** type of dam (material);

**(c)** hazard potential classification;

**(d)** maximum height above the downstream toe in feet;

**(e)** maximum length in feet;
**(f)** crest width in feet;
**(g)** slope of the upstream face (horizontal to 1 vertical);
**(h)** slope of the downstream face (horizontal to 1 vertical);
**(i)** elevation of the dam crest;
**(j)** elevation of spillway crest;
**(k)** elevation of outlet conduit flow line;
**(l)** freeboard in feet;
**(m)** maximum spillway discharge capacity in cubic feet per second;
**(n)** type of outlet conduit (give size and material);
**(o)** maximum outlet conduit discharge capacity in cubic feet per second; and
**(p)** location of the outlet works intake structure (using latitude and longitude or to the New Mexico state plane coordinate system).

**(7)** Vicinity map. A vicinity map of sufficient scale and size to locate the pertinent area shall be shown on the title sheet or second sheet of the drawings.

**(8)** Site topography. A detailed topography of the dam site including sufficient area upstream and downstream and at the abutments shall be provided. Elevations shall be based on North American vertical datum 1988 or more recent adjustment.

**(9)** Design details. Detailed information of the various construction features including plan view, elevations, cross-sections at the maximum section and along the outlet works, profile along and section through the centerline of the dam showing construction features and cross-sections and a profile of the emergency spillway with dimensions and construction details shall be provided. Any other information necessary for the state engineer to determine the feasibility and safety of the dam shall be required.

**(10)** Reservoir area, capacity and high water line traverse. The topography of any proposed reservoir site shall be determined to industry standards and a contour map with a contour interval of 1 foot shall be prepared. Elevations of the contours shall be tied to the North American vertical datum of 1988 or more recent adjustment. The high water line at the elevation of the dam crest will be highlighted on the contour map. A curve or table of elevation versus area and storage capacity for the reservoir shall be prepared from the contour map. The curve or table shall be from the bottom of the reservoir to the dam crest. Area shall be provided in acres and storage capacity in acre-feet.

**(11)** Point of outlet. A location of the outlet works shall be referenced to a coordinate system acceptable to the state engineer.

**(12)** Permanent bench mark. A permanent bench mark shall be established above the high water line at a location unlikely to settle or be disturbed. The North American vertical datum of 1988 or more recent adjustment and latitude and longitude or the New Mexico state plane coordinate system for the bench mark elevation and location shall be provided. A detail of construction of the permanent bench mark shall be provided.

**E. Specifications:** Specifications shall be prepared for each project describing work to be done and materials to be used to supplement construction drawings. Specifications must be clear and concise and include detailed methods of construction, qualities and sizes of materials, unit amounts to be used and methods of supervision and inspection. Specifications shall be prepared by a professional engineer licensed in the state of New Mexico qualified in the design and construction of dams. The specifications shall meet the following requirements:

**(1)** The front cover of the specifications shall show the name of the dam (identical to the application) and the county in which the dam is located. The first page behind the front cover shall show the name of the dam (identical to the dam name on the application), the county in which the dam is located, certifications in accordance with Subsections B and E of 19.25.12.12 NMAC and a statement recognizing the authority of the state engineer. An approved model statement recognizing the authority of the state engineer is provided below. Changes to the model statement require prior approval of the state engineer.

"All construction shall be performed in strict accordance with the accepted plans and specifications. Representatives of the state engineer shall have full authority to perform inspections during construction and shall have full power to act pursuant to the law and in accordance with Title 19, Chapter 25, Part 12, Dam Design, Construction and Dam Safety of the New Mexico Administrative Code if plans and specifications are not followed."

**(2)** The specifications shall be indexed.

**(3)** The specifications shall be bound and submitted on a good grade of white 8 1/2-inch by 11-inch paper.

**(4)** The general conditions shall include statements that the construction drawings and specifications cannot be significantly changed without the prior written approval of the state engineer.

**F. Easement or right of way plat:** A professional surveyor licensed in the state of New Mexico shall prepare an easement or right of way plat. The plat shall comply with the requirements as set forth in the Minimum Standards for Surveying in New Mexico, 12.8.2 NMAC. The plat shall clearly state to whom the easement is granted and what rights are conveyed with the easement. The plat shall show the footprint of the dam and appurtenant structures and the high water line in the reservoir. The plat shall be submitted with the construction drawings and recorded with the county clerk of the county or counties in which the survey is located. A certificate signed by the surveyor in accordance with Subsection C of 19.25.12.12 NMAC shall appear on the plat. A certified copy of the recorded plat bearing the recorded page and endorsement of the county clerk shall be submitted to the state engineer for filing upon completion of construction. Adequate easement or right of way shall be required for the following conditions:

**(1)** to access the dam and outlet controls during normal and flood events;

**(2)** to prevent development encroachment into the reservoir area defined by normal operation and the spillway design flood;

**(3)** to prevent development in the approach, control and discharge section of the spillway that may restrict flow through the spillway;

**(4)** to return outlet works and spillway discharge to the natural drainage and allow the outlet works to discharge freely; and

**(5)** to perform maintenance on the dam, appurtenances and surrounding areas to ensure the safe performance of the dam.

**G. Dam site security:** Submittals for dams classified as high or significant hazard potential shall address security at dams to prevent unauthorized operation or access that results in misoperation or dam failure. If in the opinion of the state engineer, the failure of the dam will result in catastrophic consequences, a security and risk management program for the dam will be required. Elements of a security and risk management program are:

**(1)** threat, vulnerability and risk assessments;

**(2)** physical security plans; and

**(3)** integration of security operational procedures.

**H. Instrumentation plan:** An instrumentation plan providing the ability to monitor and evaluate the performance of a dam is required for dams classified as high or significant hazard potential. The instrumentation plan may be submitted as a separate report or part of the operation and maintenance manual. Minimum requirements of the instrumentation plan shall be as follows:

**(1)** general description of instrumentation;

**(2)** reading schedule;

**(3)** identification of unexpected or critical data;

**(4)** specifics for each installation including:

**(a)** detailed description of installations;

**(b)** purpose of the instrumentation;

**(c)** reading and maintenance schedule instructions; and

**(5)** special instrumentation or monitoring requirements.

**I. Operation and maintenance manual:** An operation and maintenance manual is required for dams classified as high or significant hazard potential. The operation and maintenance manual identifies activity necessary to address the continued safe operation, maintenance and overall performance of the dam. Any restrictions imposed by the design shall be addressed in the operation and maintenance manual. The operation and maintenance manual shall conform to the requirements set forth in 19.25.12.17 NMAC.

**J. Emergency action plan:** An emergency action plan is required for dams classified as high or significant hazard potential. The emergency action plan identifies potential emergency conditions at a dam and specifies preplanned actions to be followed to minimize property damage and loss of life. The emergency action plan shall conform to the requirements set forth in 19.25.12.18 NMAC.

[19.25.12.11 NMAC – N, x/x/2004]

**19.25.12.12 CERTIFICATIONS:** Signed certifications by the dam owner, engineer, surveyor, state office of emergency management and the state engineer are required by these regulations on specific documents. Approved model certifications for the dam owner, engineer, surveyor, state office of emergency management and state engineer are provided below. Changes to the model certifications require prior approval of the state engineer.

**A. DAM OWNER'S CERTIFICATE:** A certificate followed by the dated signature of the dam owner and notary public acknowledgment is required on the title sheet of the construction drawings and first page behind the front cover of the operation and maintenance manual and emergency action plan. The following model certification is considered to be an example of the minimum that the dam owner shall certify. If the dam owner is a corporation, political subdivision or other governmental entity a model certificate is also provided.

state of _____ )
) ss.
county of _____ )

I, (dam owner's name) , being first duly sworn, upon my oath, state that I have read and examined the accompanying _____ (construction drawings consisting of ____ sheets, operation and maintenance manual, or emergency action plan) and know the contents and representations therein for _____ dam and all that is shown herein is done with my free consent and in accordance with my wishes and state that the same are true and correct to the best of my knowledge and belief.

_____
Dam owner signature Date

Subscribed and sworn to before me this _____ day of _____ , 20__.

_____
Notary public

My commission expires _____ (SEAL)

If a claimant is a corporation, political subdivision or other governmental entity the following shall be used:

state of _____ )
) ss.
county of _____ )

I, (representative's name), being first duly sworn, upon my oath, state than I am the _____ (officer) of the _____, a corporation duly organized under the laws of the state of _____, that the accompanying _____ (construction drawings consisting of ____ sheets, operation and maintenance manual, or emergency action plan) for _____ dam were made under authority of the board of directors of said corporation and that, in their behalf, I have read and examined the statements and representations and all that is shown herein is done with their free consent and in accordance with their wishes and state that the same are true and correct to the best of my knowledge and belief.

_____
Representative signature, title Date

Subscribed and sworn to before me this _____ day of _____ , 20__.

_____
Notary public

My commission expires _____ (SEAL)

**B. ENGINEER'S CERTIFICATE:** A certificate followed by the dated signature, license number and seal of the engineer responsible for preparing the design report, construction drawings, specifications, operation and maintenance manual and engineering elements of the emergency action plan is required. The certificate shall be placed on the title sheet of the construction drawings and first page behind the front cover of the design report, specifications, operation and maintenance manual and emergency action plan. The following model certification is considered to be an example of the minimum that the engineer should certify to:

state of _____ )
) ss.
county of _____ )

I, (engineer's name) , hereby certify that I am a professional engineer licensed in the state of New Mexico, qualified in _____ (civil, geotechnical, etc.) engineering; that the accompanying _____ (design report, construction drawings consisting of ____ sheets, specifications, operation and maintenance manual, or _____ elements of the emergency action plan) was prepared by me or under my supervision; that the accompanying _____ (design report, construction drawings consisting of ____ sheets, specifications, operation and maintenance manual, or _____ elements of the emergency action plan) is in compliance with the Dam Design, Construction and Dam Safety Regulations (19.25.12 NMAC) and that the same are true and correct to the best of my knowledge and belief.

(Engineer's signature) , License number _____, (SEAL)
Engineer's name

Date submitted _____

**C. SURVEYOR'S CERTIFICATE:** The professional surveyor licensed in the state of New Mexico preparing the plat showing acquired easements or rights-of-way shall include a certificate on the plat as modeled in Paragraph (2) of Subsection J of 12.8.2.9 NMAC, the Minimum Standards for Surveying in New Mexico. The following model certificate is considered to be an example of the minimum that the surveyor should certify to:

I, (surveyor's name) , New Mexico professional surveyor no. (surveyor's license number), do hereby certify that this (easement or right of way) survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the Minimum Standards for Surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is a (easement or right of way) survey plat for _____ dam.

(Surveyor's signature) , License number _____, (SEAL)
Surveyor's name

Date submitted _____

**D. STATE OFFICE OF EMERGENCY MANAGEMENT:** A certificate form for the state office of emergency management acceptance shall be placed on the first page behind the front cover of the emergency action plan. This certificate is to be signed by state office of emergency management after all necessary corrections or additions, if any, have been made.

state of _____ )
) ss.
county of _____ )

I hereby certify that the accompanying emergency action plan for _____ dam has been duly examined by me and accepted for filing on the _____ day of _____, 20__.

_____
State office of emergency management

**E. STATE ENGINEER'S CERTIFICATE:** A certificate form for the state engineer acceptance shall be placed on the title sheet of the construction drawings and first page behind the front cover of the design report, specifications, operation and maintenance manual and emergency action plan. This certificate is to be signed by the state engineer or his representative after all necessary corrections or additions, if any, have been made.

state of _____ )
) ss.
county of _____ )

I hereby certify that the accompanying _____ (design report, construction drawings, specifications, operation and maintenance manual or emergency action plan) for _____ dam and appurtenances has been duly examined by me and accepted for filing on the _____ day of _____, 20__.

_____
State engineer

[19.25.12.12 NMAC – N, x/x/2004]

**19.25.12.13 CONSTRUCTION AND OPERATION CONDITIONS:** After reviewing the required documentation, the state engineer will notify the dam owner if any deficiencies are found with the submittal to construct and operate a dam. The dam owner will be given an opportunity to correct any deficiencies noted in the review process. Once all deficiencies have been addressed the state engineer will approve the application with conditions under which construction and operation shall occur. Failure to comply with conditions of the approved permit may result in the state engineer issuing an order to redesign, reconstruct or restrict operation of the dam and reservoir until conditions are met. Construction must be completed within two years of approving the application unless an extension of time is requested and approved by the state engineer. The conditions of construction and operation shall include, but not be limited to the following:

**A. Engineer supervising construction:** Prior to initiation of construction, the dam owner shall designate a professional engineer licensed in the state of New Mexico qualified in the design and construction of dams to supervise construction. If the state engineer finds the engineer acceptable, an order is issued approving the engineer and setting forth conditions under which the engineer will supervise construction. Conditions shall include, but shall not be limited to:

**(1)** The engineer supervising construction shall submit monthly progress reports including summary of test results, problems encountered and their solutions.

**(2)** Construction shall be in accordance with accepted drawings and specifications. State engineer approval of any modifications to the accepted drawings or specifications is required prior to undertaking the modifications. Requests for changes or modifications by the engineer supervising construction shall be submitted in writing, supported with appropriate documentation.

**(3)** The engineer supervising construction shall provide the state engineer a minimum of 72 hours notice to perform inspections as specified in the conditions of construction.

**(4)** Upon completion of construction, the engineer supervising construction shall submit to the state engineer the following items:

**(a)** a completion report, which shall include descriptions of problems and their solutions;

**(b)** a summary of materials test data and construction photographs;

**(c)** record mylar construction drawings including signed certifications on the title sheet; and

**(d)** a certificate that the dam was constructed in accordance with the accepted drawings and specifications and is in satisfactory condition. An approved model certificate for the engineer supervising construction is shown below. Changes to the language in the certifications require prior approval by the state engineer.

state of _____ )
) ss.
county of _____ )

I, _____, (engineer's name) state that I am a qualified professional engineer licensed in the state of New Mexico, that I have inspected the _____ dam and appurtenances and find them to be completed in accordance with the record construction drawings and specifications and are now in a satisfactory condition for acceptance.

(Engineer's signature)____ License number _____, (SEAL)

Engineer's name

Date submitted _____

**B. State engineer's authority during construction:** The state engineer may perform inspections at any time during construction of the dam and appurtenances. Inspections will vary with each project, based on the complexity of the design. Inspection of specific construction items are standard construction conditions in the permit and require the engineer supervising construction to provide the state engineer with a minimum of 72 hours advanced notice. If the state engineer receives a minimum of 72 hours advanced notice, a delay of construction to schedule a state engineer inspection is not required. State engineer inspection fees are charged in accordance with Subsection D of 19.25.12.8 NMAC. Fees for inspection of construction by the state engineer not paid on demand shall become a lien on any land or other property of the dam owner and may be recovered by the state engineer.

**C. Completion of construction:** Upon completion of construction, a proof of completion of works form for the dam shall be submitted in accordance with 19.25.12.14 NMAC. Owners of dams classified as high or significant hazard potential shall submit to the state engineer an updated operation and maintenance manual in accordance with 19.25.12.17 NMAC and an updated emergency action plan in accordance with 19.25.12.18 NMAC incorporating any modifications made during construction. Upon the satisfaction of all conditions in the approved application, pending the issuance of a certificate of construction and license to operate a dam, use of the reservoir shall require written permission from the state engineer. Use of the dam and reservoir are restricted until the state engineer accepts the updated operation and maintenance manual and emergency action plan, if required.

**D. Extension of time for construction:** The state engineer will grant an extension of time for completing construction upon proper showing by the dam owner of due diligence or reasonable cause for delay and accompanied with a fee in accordance with Subsection C of 19.25.12.8 NMAC. An affidavit by a professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall be filed with the state engineer providing evidence that the design of the dam meets or exceeds the design requirements in accordance with 19.25.12.11 NMAC. Extension of time will be approved in 2-year increments and total time shall not exceed ten years. Failure to request an extension of time shall result in cancellation of the permit by the state engineer.
[19.25.12.13 NMAC – N, x/x/2004]

**19.25.12.14 PROOF OF COMPLETION OF WORKS:** Upon completion of all construction conditions a proof of completion of works for the dam shall be filed on a form provided by the state engineer with appropriate fees in accordance with Subsection E of 19.25.12.8 NMAC. The proof of completion of works for the dam shall be filed with original signature of the dam owner and engineer supervising construction.
[19.25.12.14 NMAC – N, x/x/2004]

**19.25.12.15 CERTIFICATE OF CONSTRUCTION OF A DAM:** Upon receipt of the proof of completion of works form, the state engineer will determine if all construction conditions of the approved application were met. Upon a determination by the state engineer that all construction conditions have been complied with, the state engineer shall issue a certificate of construction. The certificate of construction shall address the general properties of the dam and appurtenances. The dam owner shall record the certificate of construction with the county clerk of the county within which the works are located.
[19.25.12.15 NMAC – N, x/x/2004]

**19.25.12.16 LICENSE TO OPERATE A DAM:** Upon issuance of a certificate of construction the state engineer shall issue a license to operate a dam. The license to operate a dam shall address operation conditions and dams shall be operated in accordance with the operation conditions. In addition, dams classified as high and significant hazard potential shall operate in accordance with the operation and maintenance manual and emergency action plan prepared in accordance with Sections 17 and 18 of 19.25.12 NMAC. Failure to comply with the conditions of the license to operate a dam may result in a state engineer order that limits operation, requires specific action by the owner and if necessary the license to operate a dam may be revoked by the state engineer. If a license to operate a dam is revoked the state engineer will order the dam breached in accordance with Subsections B or C of 19.25.12.19 NMAC.
[19.25.12.16 NMAC – N, x/x/2004]

**19.25.12.17 OPERATION AND MAINTENANCE MANUAL:** Owners of dams classified as high or

significant hazard potential shall prepare, maintain and adhere to an operation and maintenance manual that addresses the continued safe operation, maintenance and performance of the dam. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare the operation and maintenance manual. The front cover shall show the name of the dam (identical to the application), the county in which the dam is located and type of report. The first page behind the front cover shall show the name of the dam (identical to the dam name on the application), the county in which the dam is located and signed certifications for the dam owner, engineer and state engineer in accordance with Subsections A, B and E of 19.25.12.12 NMAC. Operation or maintenance of the dam in violation of the procedures presented in the accepted operation and maintenance manual that affect the safety of the dam will result in an order being issued requiring the dam owner to address the problem. Failure to comply with orders issued by the state engineer may result in the license to operate the dam being revoked and the dam being ordered breached in accordance with Subsection B or C of 19.25.12.19 NMAC. Generally, the operation and maintenance manual shall address the following, with modification depending on the specific dam application:

**A. Project information:** General information on the project including the purpose, location, history, responsibilities and description and properties of the dam and appurtenances shall be required.

**B. Operation:** Operation instructions for the project shall include but not be limited to the following:

**(1)** Reservoir:

**(a)** storage allocations;

**(b)** spillway design flood water level;

**(c)** emergency reservoir evacuation procedures and maximum discharge rate; and

**(d)** first filling criteria and monitoring requirements.

**(2)** Outlet works:

**(a)** procedures for operation of outlet works including:

**(i)** first operation;

**(ii)** seasonal startup;

**(iii)** seasonal shutdown;

**(iv)** installation and removal of bulkhead;

**(v)** operation procedures for specific equipment; and

**(vi)** electrical systems and controls.

**C. Instrumentation:** The following elements for monitoring instrumentation shall be addressed

**(1)** general description;

**(2)** purpose;

**(3)** critical readings;

**(4)** reading and maintenance procedures; and

**(5)** reading schedule.

**D. Maintenance:** Maintenance requirements and schedule shall be included.

**E. Inspection:** Inspection requirements, schedule and recommended checklist shall be included.

**F. Updates and revisions:** An update and revision procedure shall be included.

**G. Appendices:** Appendices to include any design consideration and the instrumentation plan to ensure any restrictions imposed by the design are incorporated into the operation and maintenance manual shall be included. Copies of inspections forms and any other information that supports and supplements the material used in the development and maintenance of the operation and maintenance manual.

[19.25.12.17 NMAC – N, x/x/2004]

**19.25.12.18 EMERGENCY ACTION PLAN:** Owners of dams classified as high or significant hazard potential shall prepare, maintain and exercise an emergency action plan for immediate action in the event of a potential dam failure. The emergency action plan shall follow the format provided by the state engineer or a format that has prior approval of the state engineer. The front cover shall show the name of the dam (identical to the application), the county in which the dam is located and type of report. The first page behind the front cover shall show the name of the dam (identical to the dam name on the application), the county in which the dam is located and signed certifications for the dam owner, engineer, state office of emergency management and state engineer in accordance with Subsections A, B, D and E of 19.25.12.12 NMAC. The dam owner shall work with the local emergency management office in preparing the emergency action plan. The dam owner shall submit a copy to the state office of emergency management for acceptance prior to submittal to the state engineer. The dam owner shall

review the emergency action plan annually, update as necessary and furnish a copy of updates to the state engineer, state office of emergency management and all copyholders. Failure to act in accordance with the accepted emergency action plan that affects the safety of the dam will result in an order being issued requiring the dam owner to address the problem. Failure to comply with orders issued by the state engineer may result in the license to operate the dam being revoked and the dam being ordered breached in accordance with Subsection B or C of 19.25.12.19 NMAC. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare engineering elements of the emergency action plan as specified below. An emergency action plan shall contain the following minimum elements:

**A. Notification flowchart:** A notification flowchart showing who is to be notified, by whom and in what priority.

**B. Emergency detection, evaluation and classification:** Procedures for reliably and timely identifying an emergency situation to ensure that an appropriate course of action is implemented. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare this element.

**C. Responsibilities:** A determination of responsibility for emergency action plan related tasks.

**D. Preparedness:** A list of materials, equipment and manpower available to moderate or alleviate the effects of a dam failure or spillway release. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare this element.

**E. Inundation map:** An inundation map delineating the areas that will be flooded as a result of dam failure. The dam breach analysis shall be prepared in accordance with Subparagraphs (a) through (g) of Paragraph (1) of Subsection C of 19.25.12.11 NMAC for the failure with the water level at the reservoir storage capacity and at the maximum water level during the spillway design flood event. If a dam is located upstream, failure scenarios with the upstream dam shall also be evaluated. Flood control dams that have not experienced a fill to the spillway crest shall prepare a failure scenario with the water level at the spillway crest. Flood inundation maps shall also be prepared for the maximum release without failure of the dam. Evaluation of the effects of flooding from dam failure shall extend at least to the location downstream where the flood no longer poses a threat to life or property. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare this element.

**F. Appendices:** All information that supports and supplements the material used in the development and maintenance of the emergency action plan.

[19.25.12.18 NMAC – N, x/x/2004]

**19.25.12.19 CHANGES TO AN EXISTING DAM:** A dam owner proposing to reconstruct, enlarge, modify, restore reservoir capacity, repair, remove or breach an existing dam must make application to and receive approval from the state engineer prior to undertaking any such action. The current condition of the dam, the type of repair or modification and the proposed means to achieve the repair or modification all dictate the detail of the information that shall be provided to the state engineer in order to obtain approval. Because existing dams present the same hazards to life and property downstream as new dams, an evaluation of the current condition of the dam and compliance with the design requirements in Subsection C of 19.25.12.11 NMAC shall be addressed in the submittal. If the state engineer determines compliance with requirements in Subsection C of 19.25.12.11 NMAC are critical to the safety of the dam, the state engineer shall issue an order requiring that the deficiency be addressed as part of the proposed change. Routine maintenance work defined in accordance with 19.25.12.17 NMAC does not require prior state engineer approval. Dam owners shall not abandon a dam without breaching or removing the dam to ensure the dam no longer poses a risk to life, property, the environment surrounding the dam or downstream of the dam. A change in ownership requires notification to the state engineer on a form provided by the state engineer and recognition of the responsibility and liability associated with dam ownership. This section exempts federal dams if no change to the water storage permit is required. In general, the following minimum submittal is required to make changes to an existing dam:

**A. Proposed changes to an existing dam:** For dam owners proposing to reconstruct, enlarge, modify, restore reservoir capacity, or repair an existing dam, the following supporting documentation is required prior to undertaking any such action:

**(1)** An amended application if properties of the dam and appurtenances change. Fees for filing the amended application and for reviewing drawings and specifications shall be in accordance with Subsections A and B of 19.25.12.8 NMAC. Fees are waived if the state engineer requires the change to address a dam safety deficiency.

**(2)** Documentation of sufficient water rights if changes in storage or release requirements are

proposed in accordance with the requirements of Subsection B of 19.25.12.11 NMAC.

**(3)** A design report addressing the proposed change in accordance with the requirements of Subsection C of 19.25.12.11 NMAC. The design report shall address whether the existing condition of the dam is in compliance with the design requirements listed in Subsection C of 19.25.12.11 NMAC. Where the existing condition of the dam is not in compliance with the design requirements of Subsection C of 19.25.12.11 NMAC, the design report shall propose changes to address compliance with the design requirements of Subsection C of 19.25.12.11 NMAC or request a waiver that the deficiency is not critical to the safety of the dam and provide adequate justification for the waiver.

**(4)** Construction drawings and specifications addressing the proposed change in accordance with the requirements of Subsections D and E of 19.25.12.11 NMAC.

**(5)** A revised easement or right of way plat if additional easement or right of way is required. The plat shall be in accordance with the requirements of Subsection F of 19.25.12.11 NMAC.

**(6)** For dams classified as high or significant hazard potential, a dam site security assessment in accordance with the requirements of Subsection G of 19.25.12.11 NMAC.

**(7)** For dams classified as high or significant hazard potential, an instrumentation plan if a change to the dam and appurtenances requires monitoring unless documentation is provided justifying that no change in monitoring is necessary. The instrumentation plan shall adhere to the requirements in Subsection H of 19.25.12.11 NMAC.

**(8)** For dams classified as high or significant hazard potential, an updated operation and maintenance manual and emergency action plan unless documentation is provided justifying that no change is necessary. The updates shall adhere to the requirements in Sections 17 and 18 of 19.25.12 NMAC.

**B. Removal or breach of dams classified as high or significant hazard potential:** Dam owners intending to breach or remove a dam classified as high or significant hazard potential shall submit a plan to the state engineer for approval prior to breaching or removing the dam. The plan shall evaluate the potential effects of the dam removal or breach on life, property and the environment downstream. A professional engineer licensed in the state of New Mexico qualified in the design and construction of dams shall prepare the plan. The state engineer will revoke the license to operate a dam upon completion of all construction conditions. The plan shall meet the following conditions:

**(1)** The reservoir shall be emptied in a controlled manner, which will not endanger lives or damage property downstream.

**(2)** The dam or breach area shall be excavated down to the level of natural ground and the breach shall be of sufficient width to safely pass the 100-year, 24-hour flood.

**(3)** The side slopes of the breach shall be excavated to a stable angle.

**(4)** The breach shall be armored as necessary to prevent erosion of the breach area.

**(5)** The plan shall control sediment previously deposited in the reservoir.

**(6)** Drawings shall be prepared in accordance with the appropriate requirements listed in Subsection D of 19.25.12.11 NMAC and shall include a title sheet with required certifications and signatures, the location, dimensions and lowest elevation of the breach and any other detail to sufficiently describe the proposal.

**(7)** Designation of the professional engineer licensed in the state of New Mexico qualified in the design and construction of dams that will supervise construction of the breach or dam removal. Submittal of the professional engineer's qualifications for state engineer approval is required.

**C. Removal or breach of dams classified as low hazard potential:** Owners of dams classified as low hazard potential shall submit a written notice to the state engineer of intent to breach the dam. The state engineer will revoke the license to operate a dam upon completion of all construction conditions. The breach notice shall meet the following minimum requirements:

**(1)** The bottom width elevation of the breach shall be to original ground.

**(2)** The bottom width of the breach shall be a minimum of one-half the height of the dam but not less than 10 feet.

**(3)** The side slopes not steeper than one horizontal to one vertical.

**(4)** The excavated material shall not be placed in the streambed.

**D. Closure of a tailings facility.** A closure plan is prepared to address the closure of a tailings facility. State engineer approval is required before any modification occurs to a jurisdictional tailings dam. A professional engineer licensed in the state of New Mexico qualified in the design and construction of tailings dams shall prepare the closure plan. The state engineer will revoke the license to operate a dam upon completion of all construction conditions. The plan shall address the following issues:

**(1)** long-term stability under static and dynamic conditions;

**(2)** control of surface runoff to avoid erosion;

**(3)** plan for long term monitoring, if appropriate; and

**(4)** identification of an engineer licensed in the state of New Mexico qualified in tailings dam design and construction to supervise implementation of the closure plan. Submittal of the engineer's qualifications for state engineer approval is required.

**E. Construction and operating conditions:** After reviewing the required documentation, the state engineer will notify the dam owner if any deficiencies are found with the submittal. The dam owner will be given an opportunity to correct any deficiencies noted in the review process. Once all deficiencies have been addressed the state engineer will approve the amended application or proposed change with conditions under which construction and operation shall occur. Action by the state engineer will be in accordance with 19.25.12.13 NMAC, appropriately modified to address the proposed changes.

**F. Proof of completion of works, certificate of construction and license to operate:** Requirement for a proof of completion of works form for the dam, certificate of construction and license to operate a dam for changes to a dam shall be in accordance with the Sections 14, 15 and 16 of 19.25.12 NMAC, appropriately modified to address the proposed changes. If the dam is breached, the state engineer will cancel the permit and revoke the license to operate a dam.

[19.25.12.19 NMAC – N, x/x/2004]

**19.25.12.20 CHANGES TO AN EXISTING NON-JURISDICTIONAL DAM:** A dam owner proposing to reconstruct, enlarge, or modify a non-jurisdictional dam, resulting in a jurisdictional dam after construction is completed, shall comply with 19.25.12.11 NMAC before construction begins. If the purpose of an exempt dam changes, resulting in a jurisdictional dam, or if ownership changes, resulting in a jurisdictional dam, the owner shall comply with 19.25.12.11 NMAC. The state engineer will give the owner a reasonable amount of time to comply with 19.25.12.11 NMAC. If the owner fails to comply with 19.25.12.11 NMAC, the dam will be ordered breached in accordance with Subsection B or C of 19.25.12.19 NMAC.

[19.25.12.20 NMAC – N, x/x/2004]

**19.25.12.21 EXISTING DAMS:** The state engineer inspects existing dams to verify dams are operated and maintained in a safe manner. Access to the dam site shall be made available to the state engineer upon request. If a dam safety problem is observed by the state engineer or reported to the state engineer, an order will be issued requiring the dam owner to address the problem. If a dam incident occurs at a dam, the dam owners shall report the incident to the state engineer within 72 hours. If a major repair is required at an existing dam, the plan to repair the dam shall be in accordance with 19.25.12.19 NMAC. Minor repairs not identified as routine maintenance require state engineer approval. Failure to comply with orders issued by the state engineer may result in the license to operate a dam being revoked and the dam ordered breached in accordance with Subsection B or C of 19.25.12.19 NMAC. Owners of existing dams shall comply with the following:

**A.** Owners acquiring property with a dam shall promptly notify the state engineer on a form provided by the state engineer of the change in ownership. Recognition of the responsibility and liability associated with dam ownership is required.

**B.** Owners of dams classified as low or significant hazard potential shall evaluate the hazard classification if downstream development occurs to ensure public safety. The dam owner shall submit the results of the hazard potential evaluation prepared in accordance with Paragraph (1) of Subsection C of 19.25.12.11 NMAC to the state engineer for approval and a plan for addressing design deficiencies. If the hazard potential classification changes due to downstream development, the state engineer shall give the dam owner a time limit to address deficiencies. Deficiencies shall be addressed in accordance with Paragraphs (3), (12) and (13) of Subsection C of 19.25.12.11 NMAC and Sections 17 and 18 of 19.25.12 NMAC. If the dam owner fails to address a deficiency, the state engineer will revoke the license to operate the dam and order the dam breached in accordance with Subsection B or C of 19.25.12.19 NMAC.

**C.** Dams classified as high or significant hazard potential shall be inspected on an interval no greater than 5 years by a professional engineer licensed in the state of New Mexico qualified in the design and construction of dams. The owner is responsible for securing the services of the professional engineer. The professional engineer shall provide a signed and sealed report to the state engineer describing the findings of the inspection and recommendations for corrective action or changes to the operating procedures. Routine inspection by the state engineer as described in 19.25.12.21 NMAC satisfies this requirement.

**D.** Dams classified as high or significant hazard potential shall comply with the spillway capacity requirement described in Paragraph (5) of Subsection C of 19.25.12.11 NMAC upon receiving a state engineer order to address the deficiency.

**E.** Dams classified as high or significant hazard potential shall comply with the stability analysis and seismic design and analysis requirements described in Paragraphs (12) and (13) of Subsection C of 19.25.12.11 NMAC upon receiving a state engineer order to address the deficiency.

**F.** Dams classified as high or significant hazard potential shall comply with the dam site security requirement described in Subsection G of 19.25.12.11 NMAC upon receiving a state engineer order to address the deficiency.

**G.** Dams classified as high or significant hazard potential shall comply with 19.25.12.17 NMAC requiring an operation and maintenance manual. Upon compliance with 19.25.12.17 NMAC the state engineer will issue a license to operate the dam. Dams classified as high hazard potential shall comply by December 31, 2007. Dams classified as significant hazard potential shall comply by December 31, 2009.

**H.** Dams classified as high or significant hazard potential shall comply with 19.25.12.18 NMAC requiring an emergency action plan. Dams classified as high hazard potential shall comply by December 31, 2007. Dams classified as significant hazard potential shall comply by December 31, 2009.

**I.** Dam owners that transfer the entire water right out of the reservoir shall have their license to operate a dam revoked and receive from the state engineer an order to breach the dam in accordance with Subsection B or C of 19.25.12.19 NMAC.

**J.** Dam owners that fail to obtain state engineer approval prior to construction of a dam shall comply with all conditions imposed by the state engineer within a time limit established by the state engineer or the state engineer will order the dam breached in accordance with Subsection B or C of 19.25.12.19 NMAC.

[19.25.12.21 NMAC – N, x/x/2004]

**19.25.12.22 SEVERABILITY:** If any portion of this Part is found to be invalid, the remaining portion of this Part shall remain in force and not be affected.

[19.25.12.22 NMAC – N, x/x/2004]

**History of 19.25.12 NMAC: [RESERVED]**